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eWiSACWIS Ease of Use Action Plan

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bridging strategy, technology and customer experience

Background

As a part of the eWiSACWIS Quality Improvement Project that is underway for the Department of Health and Family Services, Evantage Consulting has been asked to identify a sustainable strategy to increase the ease of use of eWiSACWIS, a case management and payment system used by staff in the state of Wisconsin to manage and track child welfare cases. Recommendations to enhance ease-of-use will focus on the usability objectives agreed upon by the eWiSACWIS Quality Improvement Project Steering Committee:

- Efficiency -- The resources consumed to achieve end-user goals are at an acceptable and accurate level
- Effectiveness – End users achieve the *right* goals they set out to achieve in the system
- Error Handling & Recovery -- The system limits the errors that end-users encounter and helps them recover when they occur

To achieve these objectives the following approaches will be used:

- Revise the development **process** to be end-user-focused, rather than technology-driven, following a User Centered Design (UCD) process.
- Support end-users through efficient and effective **communication** channels including, email, web-based support, help desk, **training,** system level communication (i.e., online help, page instructions and error messages), and system-generated documents.
- Develop a strong knowledge of usability **best practices** within the eWiSACWIS design and development team through formal training and experience.

About This Plan

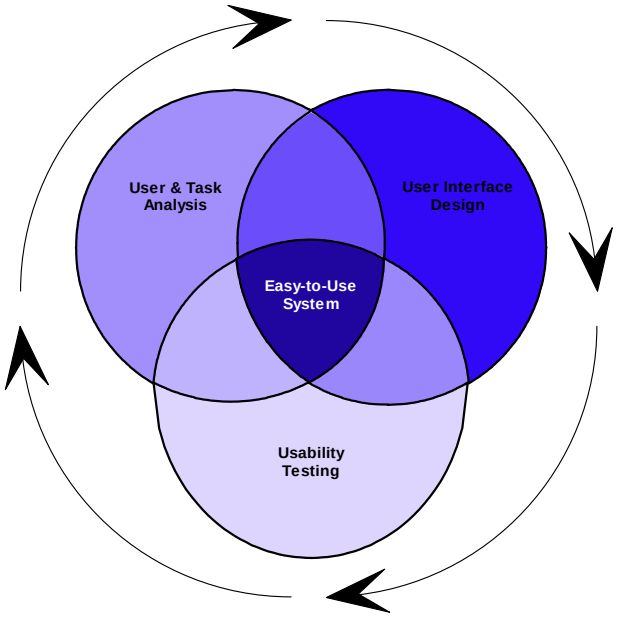
This Ease-of-Use Action Plan addresses both the need to develop a sustainable process to ensure that eWiSACWIS is easy to use over time, while also providing recommendations for ways to make changes to eWiSACWIS in the short term to “remove stones from the backpacks” of end-users.

User Centered Design: A Sustainable QI Process to Enhance Ease of Use

A process called User Centered Design can help ensure the ease-of-use of a system over time. User Centered Design is a methodology that concentrates on design and development from user, user task, and user interface perspectives. Its goal is to develop easy-to-use applications.

While the existing development process involves users, it primarily solicits the feedback of eWiSACWIS super users. Feedback is obtained through walk-through sessions where system experts demonstrate how the system would work. This feedback is very different than information gathered when typical end-users are asked to sit down and use the system without prompting, as they would have to do in their day-to-day work.

Product demonstrations also occur late in the development process, rather than incorporating users into the development process from the outset, to understand end users’ natural workflow and terminology they use in their jobs. Having a user interface reflect natural workflow processes and terminology makes it possible for end users to use a system more efficiently.



User Centered Design (UCD) is an iterative process, which complements quality improvement methodology. UCD activities need to be integrated into the current design and development effort used to maintain and enhance eWiSACWIS.

UCD activities should focus on the system features and functionality that will support the primary usability objectives of the system to be efficient, effective and error tolerant for end-users.

Following a UCD process can also result in efficient use of limited development dollars. The following two excerpts from *The Cost Benefits of Usability* (G. Bias & Deborah J. Mayhew, Academic Press, 1994) identify benefits of following a UCD process:

> "A crucial short-term benefit [to usability engineering] is the reduction in development costs and time. This key benefit can have a rippling effect throughout the product's life cycle. Pressman (1992) estimates the increasing cost of a change during development as one unit during project definition, 1.5-6 units during project development, and 60-100 units during maintenance after project release. Defining user requirements, testing usability prototypes, and performing usability walkthroughs early in development can significantly reduce the cost of identifying and resolving usability problems and can save time in software development."
>
> "Eighty percent of software life cycle costs occur during the post release maintenance phase. A review of maintenance work undertaken shows that 80% of necessary maintenance is due to unmet or unforeseen user requirements, and 20% is due to "bugs" or reliability problems."
>
> "…case study data show that internal development organizations are spending the majority of their resources on maintenance activities and thus cannot initiate development of strategic new systems."
>
> "It is estimated that a typical call to a software support line costs the manufacturer between $4.00 and $10.00 per call…. once customers call a first time, they will be much more likely to become repeat or, worst of all, frequent callers. The cost of these seemingly necessary calls can drive the profitability of a product down so far that it is impossible to break even on development costs, let alone show a profit."

Ease of Use Action Plan

The Ease of Use Action Plan outlines both short-term and long-term steps that can be taken to make eWiSACWIS easier to use. Recommendations are based on meeting the usability objectives of efficiency, effectiveness and error tolerance. They also reflect issues raised by end-users who participated in the site visits and communications audit.

In summary the plan recommends that the following actions be taken:

A. Implement a user centered design and development process.
B. Action: Establish a goal to eliminate end-users having to enter data into the system more than once.
C. Review and revise the eWiSACWIS Style Guide and associated system functionality to support system ease of use and web-based interaction conventions.
D. Confirm that the recently implemented changes to the search functionality meet end-user needs through usability testing. Modify search functionality if usability test results indicate the need for further revision.
E. Action: Implement a process for editing work after is has been saved and correcting errors in the system.
F. Revise the format of system generated documents to meet the needs of the range of end-users (i.e., workers, judges, clients and program managers).
G. Refine communication channels based on Communications Audit recommendations.
H. Leverage common web application functionality to enhance efficiency, including the ability of workers to collaborate as a team on cases.
I. Begin the planning process for migration away from a client-server user interface to a web-based application user interface, including an updated information architecture and navigation model.
J. Action: Establish benchmarks for end-user competence with the tool. Strive for a "zero" training goal, meaning that users should be able to become proficient on the primary tasks required for them to complete their job responsibilities without out formal training support after they have completed policy training.

Action Items

The action items below have been reviewed by the eWiSACWIS Maintenance & Operations team and been placed in the following categories:

Category	**Action**
Ongoing	Effort will be a continuous process.
Under consideration	Further assessment is needed before proceeding.
In progress	Decision made to move forward, date for completion not yet determined
Scheduled for [date] release	The item is scheduled for
Completed	Completed
Do not pursue	The issue has been reviewed and the decision has been made to not pursue for policy/technical

A. Action: Implement a user centered design and development process.

Objectives/Approaches Supported: Effectiveness, Efficiency, Error Handling

Description: Implementing web-based systems has evolved to be a collaborative effort between technologists, program staff and end users. The eWiSACWIS team needs to refine the process of integrating end-users into the development effort to ensure that the system supports end users' job responsibilities.

No.	Action	Category
A-1	Identify a resource within the design/development team who will act as usability lead.	Ongoing
A-2	Obtain training on the user centered design process for the design/development team, so that they have the skills necessary to incorporate users into the process. Resources for training include: ▪ Human Factors International ▪ www.usability.gov offers both training resources and online resources for incorporating end-users into the development process ▪ Evantage Consulting	Ongoing
	Review the existing design/development process and identify points where the following activities can be inserted: 1. User and task analysis for designing new functionality and refining existing high-priority functionality. 2. Interface design activities that reflect how end-users perform tasks (task flows), the terminology they use and web application design. 3. Validate high priority system functionality and tasks through end-user usability testing on a regular basis. Establish a process for incorporating modifications based on testing into subsequent release(s). Usability testing will allow the program and development team to obtain feedback on the design of five to seven key features or enhancements scheduled in each release. The testing process needs to: ▪ Deliver end-user feedback quickly enough so that results can be acted upon in the current (optimal) or subsequent release. ▪ Build a base of knowledge among the program and development teams of how end-users interact with the system. ▪ Identify benchmarks that can be developed for evaluating the ease-of-use of the system and whether or not usability objectives are being achieved. Testing should be conducted by personnel not directly involved in the design of the release to maintain impartiality. Usability testing results will be prepared and discussed with end-users, the Steering Committee and the design/development team. Decisions will be made about how to address usability issues identified during testing in the context of the overall release objectives. Methods to conduct usability testing will need to be developed as part of implementing a usability plan. Usability testing should be informal and rapid. Logistics of the testing sessions will need to be determined as part of implementing a usability testing process. A resource will need to be identified to coordinate and conduct usability testing.	Ongoing
A-3	Counties will participate in a rotating user group that provides rapid	Ongoing

No.	Action	Category
	access to 5-7 end-users* each development cycle (typically quarterly) who will participate in one or two rounds of usability testing during the requirements and design phase of the development effort. End-users would need to be available for a 60-90 minute evaluation session. This user group can also provide rapid feedback on design questions that arise during the design process.	
A-4	Develop benchmarks on which to measure system effectiveness, efficiency and error tolerance/minimization. The benchmarks need to measure how the system supports the goals of the program. For example, how does the system support front-line workers for the maximum amount of time with their clients? How does the system benefit families? Measures to consider: ▪ Focus on measures that support the system usability objectives of efficiency, effectiveness and error-tolerance. ▪ Error exception reports	In progress

* The number of end users to be involved in a round of usability testing is based on the rule of thumb that five to seven users can identify 80 percent of the usability issues (see more information: http://www.useit.com/alertbox/20000319.html)

B. Action: Establish a goal to eliminate end-users having to enter data into the system more than once.

Objectives/Approaches Supported: Efficiency

Description: Feedback from and observations of end-users indicate that they routinely have to copy and paste information from one area of the system into another area of the system. This is time-consuming and could result in reduced data integrity. It also makes it difficult for users to understand how or where to correct errors.

No.	Action	Category
B-1	Establish as a goal to eliminate multi-entry of the same data in the system. Considerations: 1. There are Federal requirements addressing duplicate data entry. 2. Support ways for users to locate the source where the data is initially input so that it can be revised. Linking to the source from the template would be optimal. 3. The most common user action is the ability to copy over large portions of text.	Ongoing

C. Action: Review and revise the eWiSACWIS Style Guide and associated system functionality to support system ease of use and web-based interaction conventions.

Objectives/Approaches Supported: Effectiveness, Efficiency, Error Handling

Description: Basic interface elements can make a significant impact on end-users' ability to achieve their work goals. As the eWiSACWIS system evolves from a legacy client-server system to a web-based application, the current Style Guide should be modified to support the objectives of the system.

No.	Action	Category
C-1	Revise system functionality and guideline 2.3.4 to have hyperlinks change state when a link has been visited during a session. The common state change is for visited text links to be purple and underlined. This will provide users with a visual cue of the pages that they have visited.	Under consideration
C-2	Revise system functionality and guideline 2.3.2.1 to allow sorting of tables by table header. This will allow users the ability to locate information more quickly. Default sort should be the most commonly used search technique.	Under consideration
C-3	Add system functionality and guideline: Default cursor to first enterable text field. This will help increase user's efficiency in completing forms.	This is already a standard.
C-4	Revise system functionality and guideline 2.5.1.2 to expand the size of text entry fields to correlate more closely to the average character length of the data entered. This will make it easier for users to input, edit and review large blocks of text in the system.	Under consideration
C-5	Investigate the possibility of incorporating rich text editing functionality into the tool, so that users would be able to use common word processing features (font changes, spell check, etc.) within eWiSACWIS.	Under consideration
C-6	Investigate the possibility of allowing for file/text import functionality. This would allow users to create documents in word processing software and then import them into the system.	Do not pursue
C-7	Revise system functionality and guideline 2.5.1.3 to reflect the more common web convention for indicating required fields: the use of an asterisk next to the field label.	Under consideration
C-8	Revise system functionality and guideline 2.5.1.6 to include information for selecting defaults for Check Boxes. The defaulted value for a checkbox should be the most commonly selected option. Research will need to be done to identify most common default states. Establishing good defaults will allow users to minimize the number of clicks they need to make when completing forms.	Under consideration
C-9	Revise system functionality and guideline 2.5.1.7 to state that the most commonly selected option should be the defaulted radio button. Research will need to be done to identify most common default states. Establishing good defaults will allow users to minimize the number of clicks they need to make when completing forms.	Under consideration
C-10	Revise system functionality and guideline 2.5.1.8 to include information on the default order of option menus (drop down). Options menus should be ordered with the most common selection on the top. Establishing good defaults will allow users to minimize the number of clicks they need to make when completing forms. Consideration: 1. The size of the user base makes it difficult to identify the most common selection. 2. Currently the items in the option menu are in alphabetical order for consistency. 3. The optimal solution would be to allow users to personalize their menu options. 4. Personalization needs to be balanced against Federal guidelines that require users to make a "conscious" selection rather than setting too many defaults in the system. 5. This may be an opportunity to have further discussions about the Federal guidelines and balance them against the need for users to	Under consideration

No.	Action	Category
	be as efficient as possible.	
C-11	Revise system functionality and guideline 2.5.1.9 to include information on the default order of list box items. List box items should be ordered with the most common selection on the top. Establishing good defaults will allow users to minimize the number of clicks they need to make when completing forms.	Do not pursue
C-12	Revise system functionality and guideline 2.5.2.1 to indicate that the defaulted command button should be the action that the user will most likely take unless it is a destructive action (delete, etc.). Establishing good default action buttons allows users to use the keyboard to tab through a form and then initiate an action by clicking the enter key. This enhances user efficiency.	Under consideration
C-13	Allow the tree control (expando) to remain expanded when a user navigates through its levels throughout the entire web session. Then, users will not have to click through the levels each time they want to return to a page. Additionally, it will provide users with cues of where they are in the application.	Under consideration
C-14	Revise guideline 2.8.3 to expand on the elements that need to be included when writing error messages. Error messages should contain: 1. Explanation of what the user did wrong. 2. Explanation of how to fix the problem. 3. Explanation of where to get additional help. Additionally: – Preserve as much work as possible, so that when users return to the page after closing an error message, they do not have to re-input work. – Do not provide errors that contain negative words like "don't", "error", or "mistake". – Do not use pointed phrases such as "you did not" or "you cannot" – Do not ask the user "Please" with every confirmation. Only ask the user "please" when you are asking them to do something out of the ordinary.	Under consideration
C-15	Update the Style Guide to eliminate the use of placing any right mouse click functionality in the system for the following reasons: – Web-based systems do not allow for right mouse functionality because the right mouse is controlled by the browser. – Because web-based systems do not typically place functionality via the right mouse button, users do not expect or think of using it. – Right mouse functionality in traditional client-server applications are typically only accessed by super users and the functionality is always available in another form (i.e., from a menu).	Under consideration
C-16	Update the Style Guide to reflect the common web convention for gaining access to the calendar widget (the small calendar that can be displayed for date selection). The convention is typically to have a calendar icon place next to the entry fields where a date is selected. This will make the feature evident to users, rather than having it available through right mouse click functionality.	Under consideration
C-17	Agree on an approach for using the controls of action buttons and text links in the system, update the Style Guide and then implement the approach throughout the system.	Under consideration

No.	Action	Category
	Traditionally, links (underscored text) have been used to take users to another location within the site/application. Action buttons have been used to perform an action on an object (i.e., change, update, edit, add, save, print and item).	

D. Action: Confirm that the recently implemented changes to the Search functionality meet end-user needs through usability testing. Modify Search functionality if usability test results indicate the need for further revision.

Objectives/Approaches Supported: Effectiveness, Efficiency

Description: Based on web logs, search is the most frequent activity users engage in on the system. Therefore, it is important that users are able to find what they are seeking in the system in an efficient manner.

No.	Action	Category
D-1	Conduct an informal usability test of the current search functionality and modifications that were recently made to it. Modify the user interface and search functionality based on test results.	Under consideration
D-2	Monitor search logs to identify what users are searching for to gain a better understanding of how end-users use the functionality.	Under consideration
D-3	Begin investigating how "simple" search functionality could be incorporated into eWiSACWIS. This functionality is common in web applications, which offer a simple search box on each page, with a link to advanced search. For instance, a simple search within eWiSACWIS might allow users to search for clients by case number or name. If users wanted to perform a more complex search, the user could link to an advanced search page. Example of Simple Search  Considerations: 1. Before making changes, the development team wants to evaluate the changes they recently made to better understand the usability issues regarding search. 2. Implementing a simple search needs to be evaluated from the perspective of what such a search could do to system performance.	Under consideration
D-4	Provide end-user training to support efficient searching (30 minute Quick Tips). Update the training if or when the search functionality is modified.	Under consideration
D-5	Investigate ways to make searching easier and more efficient for end-users who are not "search savvy" by allowing those with search expertise to share their "search templates." This could include: ▪ Investigate the possibility of allowing users to save search criteria. That way they could re-execute searches that they know will deliver the type of information they are seeking. ▪ Evaluate the possibility of developing a library of common search templates that users could access.	Under consideration

E. Action: Implement a process for editing work after is has been saved and correcting errors in the system.

Objectives/Approaches Supported: Error Handling

Description: At this time, it is very difficult for users to correct unintentional errors in eWiSACWIS. As a result, users do not correct errors or they find work arounds to resolve the problem (whiting out items in documents). Not being able to correct errors also causes end users to not fully trust the information in the system. This is further exacerbated by the fact that eWiSACWIS is the official record.

No.	Action	Category
E-1	Identify State and Federal standard(s) for "frozen" data; research error correction issues. Determine if there are methods for correcting "honest" errors that are allowed within the guidelines.	Under consideration
E-2	Investigate the technical possibility of including an easy way to correct errors and edit selected saved work within the system. After identifying options that are technically feasible and meet regulatory approval, obtain feedback from end-users on how the functionality would work before proceeding.	Under consideration
E-3	Establish an error correction process that end-users would be trained on for modifying information in the system so that it is accurate. Possibilities include: ▪ Online form ▪ Help desk request The nature of the correction may influence the manner in which the request is processed. For instance, spelling errors are treated differently than modifications to certain reports.	Under consideration
E-4	Develop and deliver training (30 minutes at most) on how to gain access to documents in the Knowledge Web that explains where users can correct or revise information in eWiSACWIS.	Under consideration
E-5	Research and implement the capability to allow supervisors to edit items submitted for approval. This issue will be addressed by: ▪ Streamlining the approval process. ▪ Allowing users to edit selected documents such as case plans. ▪ Continuing to workflow requirements that users who created the work, edit their work. Allowing another individual to edit work is not acceptable from a policy perspective.	Do not pursue

F. Action: Revise the format of system generated documents.

Objectives/Approaches Supported: Effectiveness

Description:

No.	Action	Category
F-1	Identify and prioritize the most frequently used and/or important reports from an end-user perspective. Focus on making changes to the highest priority documents first.	Referred to Case Plan Work Group

No.	Action	Category
F-2	Implement short-term document formatting strategies. Investigate whether or not the format (not the content) of documents can be modified without oversight implications. If it is possible consider the following: ▪ Expand margins to at least .75 inches on top, bottom, right and left margins ▪ Ensure that the font size is 10-12 point Times New Roman font ▪ Use bold font for headings and sub heads ▪ Identify and agree on document formatting guidelines	Referred to Case Plan Work Group
F-3	Implement long-term document formatting modifications: ▪ Initiate discussions with policy counterparts to revise high-priority documents to be easier for end-users to use, read and comprehend. ▪ Obtain feedback from end-users (i.e., judges and clients) to ensure that the documents meet their needs.	Referred to Case Plan Work Group

G. Action: Refine communication channels based on Communications Audit recommendations.

Objectives/Approaches Supported: Effectiveness, Efficiency

Description: [This section will be refined upon the conclusion of the Communications Audit]

No.	Action	Category
G-1	Enhance the usability of the Knowledge Web to ensure that end-users are able to locate the information they need. ▪ Conduct a usability test to identify key usability issues of the Knowledge Web. ▪ Implement a navigational structure on the site so that users are able to navigate to key groups of content (i.e., reference guides, release notes, etc.).	In progress
G-2	Leverage the expertise of the Help Desk staff to continue to identify usability issues that should be resolved or considered in future releases.	In progress
G-3	Continue to use email notifications to communicate system outage or performance issues. Investigate ways to make email notifications timelier, without encountering spam blockers.	In progress

H. Action: Leverage common web-application functionality to enhance efficiency.

Objectives/Approaches Supported: Efficiency

No.	Action	Category
H-1	Research the capability to automatically include a link directly to the item that the supervisor must review in the email notification. This could eliminate the need for supervisors to have to begin their approval by searching for the item, thus enhancing efficiency. Considerations: Security issues must be evaluated.	Under consideration
H-2	Research the ability for the last [X] accessed pages can be displayed on the desktop as a way to efficiently get users back to the work that they were doing.	Under consideration

I. Action: Leverage common web application functionality to enhance efficiency, including the ability of workers to collaborate as a team on cases.

Objectives/Approaches Supported: Effectiveness, Efficiency, Error Handling

Description: Users bring expectations for how they can interact with a web-based system from their experiences with other web sites and web applications. Users can be more efficient interacting with a system if the expectations they have are reflected in other user interfaces. This is why many web sites and web applications look and behave in similar ways even though the intent of the sites can be quite different. eWiSACWIS does not follow a common web application user interface design. Additionally, as new functionality is added to the system, it will become increasingly difficult for the current user interface to support it.

The eWiSACWIS Maintenance & Operations team is working to move the system forward to a next generation, rich web application. A strategic plan for the system that outlines that direction needs to be developed.

No.	Action	Category
I-1	Investigate the process of creating a user interface consistent with web applications and implement it.	Under consideration
I-2	Investigate web application design best practices. Agree on those that are appropriate for the eWiSACWIS team to achieve its goals. Best practices should include investigation of organizations outside the social services and case management domain and focus on systems such as: ▪ Document management ▪ Change management ▪ Workflow management	Under consideration
I-3	Develop a diagram of the current eWiSACWIS web application structure. This will serve as a starting point for re-architecting the tool.	Under consideration

J. Action: Establish benchmarks for end-user competence with the tool. Strive for a "zero" training goal, meaning that users should be able to become proficient on the primary tasks required for them to complete their job responsibilities without out formal training support *after they have completed policy training.*

Objectives/Approaches Supported: Effectiveness, Efficiency, Error Handling

Description: One of the benefits of a web-based application is that it can leverage the experience and knowledge users have of web interactions and experiences they have from other applications and sites. If generally accepted web interaction patterns are consistently applied in a tool and combined with a strong understanding of user work goals, terminology and task flows, end-users can come up to speed on new tools quickly and efficiently, with limited training.

Training beyond policy training should be evaluated to ensure that the training issues cannot be resolved by modifications in the system or the user interface.

No.	Action	Category
J-1	Basic system navigation should not require specific training.	
J-2	System training should be integrated with policy training.	